

Appln. No. 09/901,549
Amendment dated October 20, 2004
Reply to Office Action of July 29, 2004

Amendments to the Claims:

Please cancel claims 3, 6 and 11 and amend claims 1, 4, 9 and 13 as follows. The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended). An electronic device comprising:

an image pickup unit including an image pickup element and a lens system;

5 a focus controller configured to change a distance between said image pickup element and said lens system in accordance with switching between an ordinary imaging mode and a fingerprint imaging mode;

10 a request input section configured to determine whether or not a request for fingerprint imaging is input; and

a warning section configured to issue a warning if the fingerprint imaging mode is not set when it is determined by said request input section that the request for fingerprint imaging is input.

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Claim 2 (Original). The electronic device according to claim 1, further comprising:

a light source provided inside of a body of said device and configured to emit light outward of the body through said lens
5 system in the fingerprint imaging mode.

Claim 3 (Cancelled).

Claim 4 (Currently Amended). An electronic device comprising:

an image pickup unit including an image pickup lens and an image pickup element arranged on an image pickup axis of said
5 image pickup lens, said image pickup unit being rotatably provided at a body of said device so that an imaging direction of said image pickup unit is oriented in an inward direction or an outward direction of the body of said device;

an image pickup window provided on a side face of the body
10 of said device such that a fingerprint image of a finger pressed against said image pickup window is incident to the image pickup lens when the imaging direction of said image pickup unit is oriented in the inward direction of the body of said device; and

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15 a light source provided inside of the body of said device
and configured to emit light outward of said body through said
image pickup window;

a request input section configured to determine whether or
not a request for fingerprint imaging is input; and

20 a warning section configured to issue a warning if the
imaging direction of said image pickup unit is not oriented in
the inward direction when it is determined by said request input
section that the request for fingerprint imaging is input;

wherein an ordinary imaging mode is set if the imaging
direction of said image pickup unit is oriented in the outward
25 direction, and a fingerprint imaging mode is set if the imaging
direction of said image pickup unit is oriented in the inward
direction.

Claim 5 (Original). The electronic device according to
claim 4, further comprising a mirror configured to guide the
fingerprint image of the finger pressed against said image pickup
window to said image pickup element when the imaging direction of
5 said image pickup unit is oriented in the inward direction.

Claim 6 (Cancelled).

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Claim 7 (Original). An electronic device comprising:

a slide cover mounted so as to cover one end of a body of said device and expose a part of the body of the device if the slide cover is opened;

5 an image pickup lens provided on a side face of the one end of the body of the device;

an image pickup element arranged inside of the body of said device and on an image pickup axis of said image pickup lens;

10 an image pickup window provided on a side face of said slide cover on the image pickup axis; and

a light source provided on the side face of the one end of the body of the device and configured to emit light outwardly of said slide cover through said image pickup window,

15 wherein an ordinary imaging mode is set if said slide cover covers the one end of the body of said device, and a fingerprint imaging mode is set if said slide cover is opened.

Claim 8 (Original). The electronic device according to claim 7, further comprising:

a request input section configured to determine whether or not a request for fingerprint imaging is input; and

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- 5 a warning section configured to issue a warning if said slide cover is not opened when it is determined by said request input section that the request for fingerprint imaging is input.

Claim 9 (Currently Amended). A fingerprint authentication system comprising a terminal device and a fingerprint authentication device connected to each other via a network, said terminal device comprising:

- 5 a fingerprint reader configured to read a fingerprint image of a user;

a transmitter configured to transmit a readable image size of the fingerprint reader to the fingerprint authentication device at a time of fingerprint registration;

- 10 a display configured to display a guidance message for requesting an input of a fingerprint of an image size which is transmitted from the fingerprint authentication device at the time of fingerprint registration; and

- 15 a fingerprint transmitter configured to transmit the fingerprint image read by said fingerprint reader to said fingerprint authentication device, and

said fingerprint authentication device comprising:

~~a memory configured to store a reference fingerprint image;~~

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- 20 a fingerprint receiver configured to receive the
fingerprint image transmitted from said fingerprint transmitter;
a transmitting unit which transmits the guidance
message to the terminal device in accordance with the readable
image size transmitted from the terminal device at the time of
25 fingerprint registration;
a synthesizing unit which synthesizes partial
fingerprint images which are transmitted from the terminal device
at plural times in accordance with the guidance message into the
whole fingerprint image;
30 a memory configured to store the whole fingerprint
image synthesized by the synthesizing unit; and
a collation section configured to collate the
fingerprint image received by said fingerprint receiver with at
least part of the ~~reference~~ whole fingerprint image based on a
35 size of the fingerprint image received by said fingerprint
receiver.

Claim 10 (Original). The fingerprint authentication system
according to claim 9, wherein said collation section comprises:

a detector configured to detect a plurality of small regions
in the reference fingerprint image having a maximum correlation

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5 with regard to the fingerprint image received by said fingerprint receiver; and

a determining section configured to determine identity between the fingerprint image received by said fingerprint receiver and the reference fingerprint image based on a position
10 relationship of the plurality of small regions.

Claim 11 (Cancelled).

Claim 12 (Original). The fingerprint authentication system according to claim 9, wherein said fingerprint authentication device comprises a fingerprint processor configured to process the reference fingerprint image stored in said memory in a form
5 suitable to a request from said terminal device, and transmit the image to said terminal device.

Claim 13 (Currently Amended). A fingerprint authentication device adapted to be connected to a terminal device via a network, the fingerprint authentication device comprising:

~~a memory configured to store a reference fingerprint image;~~
5 a fingerprint receiver configured to receive a partial fingerprint image transmitted from an external device;

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10 a transmitter configured to transmit a guidance message for requesting an input of a fingerprint based on an image size which is transmitted from the terminal device at a time of fingerprint registration;

a synthesizing unit which synthesizes partial fingerprint images which are transmitted from the terminal device at plural times in accordance with the guidance message into the whole fingerprint image;

15 a memory configured to store the whole fingerprint image synthesized by the synthesizing unit;

20 a detector configured to detect a plurality of small regions in the ~~reference~~ whole fingerprint image having a maximum correlation with regard to the fingerprint image received by said fingerprint receiver; and

a collation section configured to determine identity between the fingerprint image received by said fingerprint receiver and the ~~reference~~ whole fingerprint image based on a position relationship of the plurality of small regions.

Claim 14 (Original). The fingerprint authentication system according to claim 13, wherein

said memory stores the reference fingerprint image of an entire fingerprint;

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5 said fingerprint receiver receives a plurality of partial
fingerprint images; and

 said collation section comprises a synthesizer configured to
combine the plurality of partial fingerprint images received by
said fingerprint receiver to produce an entire fingerprint image
10 and collates the entire fingerprint image produced by said
synthesizer with the reference fingerprint image of an entire
fingerprint stored in said memory.

 Claim 15 (Original). The fingerprint authentication system
according to claim 14, wherein said fingerprint authentication
device comprises a fingerprint processor configured to process
the reference fingerprint image stored in said memory in a form
5 suitable to a request from said terminal device, and transmit the
image to said terminal device.